

## SAFETY DATA SHEET

Creation Date 03-September-2009

Revision Date 20-June-2018

Revision Number 5

### 1. Identification

**Product Name** N,N-Dimethylformamide

**Cat No. :** AC326870000; AC326870010; AC326870025; AC326871000;  
AC326872500

**CAS-No** 68-12-2  
**Synonyms** DMF

**Recommended Use** Laboratory chemicals.  
**Uses advised against** Food, drug, pesticide or biocidal product use

#### Details of the supplier of the safety data sheet

##### Company

**Importer/Distributor**  
Fisher Scientific  
112 Colonnade Road,  
Ottawa, ON K2E 7L6,  
Canada  
Tel: 1-800-234-7437

Acros Organics  
One Reagent Lane  
Fair Lawn, NJ 07410

**Manufacturer**  
Fisher Scientific  
One Reagent Lane  
Fair Lawn, NJ 07410  
Tel: (201) 796-7100

##### **Emergency Telephone Number**

For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11  
Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99  
**CHEMTREC** Tel. No.**US**:001-800-424-9300 / **Europe**:001-703-527-3887

### 2. Hazard(s) identification

#### Classification

**WHMIS 2015 Classification** Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

<b>Flammable liquids</b>	Category 3
<b>Acute dermal toxicity</b>	Category 4
<b>Acute Inhalation Toxicity</b>	Category 4
<b>Serious Eye Damage/Eye Irritation</b>	Category 2
<b>Carcinogenicity</b>	Category 1B
<b>Reproductive Toxicity</b>	Category 1B
<b>Specific target organ toxicity (single exposure)</b>	Category 3
Target Organs - Respiratory system, Central nervous system (CNS).	
<b>Health Hazards Not Otherwise Classified</b>	Category 1
Lachrymator	

#### Label Elements

**Signal Word**  
Danger

**Hazard Statements**

Flammable liquid and vapor  
 Harmful in contact with skin or if inhaled  
 Causes serious eye irritation  
 May cause respiratory irritation  
 May cause drowsiness and dizziness  
 May damage the unborn child  
 May cause cancer  
 Lachrymator



### Precautionary Statements

#### Prevention

Obtain special instructions before use  
 Do not handle until all safety precautions have been read and understood  
 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking  
 Keep container tightly closed  
 Ground/bond container and receiving equipment  
 Use explosion-proof electrical/ventilating/lighting/equipment  
 Use only non-sparking tools  
 Take precautionary measures against static discharges  
 Do not breathe dust/fumes/gas/mist/vapours/spray  
 Wash face, hands and any exposed skin thoroughly after handling  
 Use only outdoors or in a well-ventilated area  
 Wear protective gloves/protective clothing/eye protection/face protection

#### Response

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower  
 IF INHALED: Remove person to fresh air and keep comfortable for breathing  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 IF exposed or concerned: Get medical advice/attention  
 Call a POISON CENTER/ doctor if you feel unwell  
 Wash contaminated clothing before reuse  
 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish

#### Storage

Store locked up  
 Store in a well-ventilated place. Keep container tightly closed

#### Disposal

Dispose of contents/container to an approved waste disposal plant

## 3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Dimethylformamide	68-12-2	>95

## 4. First-aid measures

### Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
<b>Inhalation</b>	Move to fresh air. If breathing is difficult, give oxygen. Obtain medical attention.
<b>Ingestion</b>	Do not induce vomiting. Obtain medical attention.
<b>Most important symptoms/effects</b>	Irritating to eyes. Breathing difficulties. May be harmful if absorbed through skin: Gastrointestinal discomfort: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting
<b>Notes to Physician</b>	Treat symptomatically

## 5. Fire-fighting measures

<b>Suitable Extinguishing Media</b>	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.
<b>Unsuitable Extinguishing Media</b>	No information available
<b>Flash Point</b>	58 °C / 136.4 °F
<b>Method -</b>	Abel-Pensky (DIN 51755)
<b>Autoignition Temperature</b>	445 °C / 833 °F
<b>Explosion Limits</b>	
<b>Upper</b>	15.2 vol %
<b>Lower</b>	2.2 vol %
<b>Sensitivity to Mechanical Impact</b>	No information available
<b>Sensitivity to Static Discharge</b>	No information available

### Specific Hazards Arising from the Chemical

Flammable. Risk of ignition. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Thermal decomposition can lead to release of irritating gases and vapors.

### Hazardous Combustion Products

Carbon monoxide (CO) Carbon dioxide (CO<sub>2</sub>) Nitrogen oxides (NO<sub>x</sub>)

### Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

### NFPA

<b>Health</b> 2	<b>Flammability</b> 2	<b>Instability</b> 0	<b>Physical hazards</b> N/A
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## 6. Accidental release measures

<b>Personal Precautions</b>	Ensure adequate ventilation. Use personal protective equipment. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Remove all sources of ignition. Take precautionary measures against static discharges.
<b>Environmental Precautions</b>	Should not be released into the environment. See Section 12 for additional ecological information.
<b>Methods for Containment and Clean Up</b>	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

## 7. Handling and storage

<b>Handling</b>	Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Use explosion-proof equipment. Take precautionary measures against static discharges.
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**Storage** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition.

## 8. Exposure controls / personal protection

### Exposure Guidelines

Component	Alberta	British Columbia	Ontario TWAEV	Quebec	ACGIH TLV	OSHA PEL	NIOSH IDLH
Dimethylformamide	TWA: 10 ppm TWA: 30 mg/m <sup>3</sup> Skin	TWA: 10 ppm Skin	TWA: 10 ppm Skin	TWA: 10 ppm TWA: 30 mg/m <sup>3</sup> Skin	TWA: 5 ppm Skin	(Vacated) TWA: 10 ppm (Vacated) TWA: 30 mg/m <sup>3</sup> Skin TWA: 10 ppm TWA: 30 mg/m <sup>3</sup>	IDLH: 500 ppm TWA: 10 ppm TWA: 30 mg/m <sup>3</sup>

#### Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

### Engineering Measures

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

### Personal protective equipment

#### Eye Protection

Goggles

#### Hand Protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Glove material	Breakthrough time	Glove thickness	Glove comments
Butyl rubber	> 480 minutes	0.5 mm	As tested under EN374-3
Neoprene	< 100 minutes	0.45 mm	Determination of Resistance to
Viton (R)			Permeation by Chemicals

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

### Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Recommended Filter type:** Type A Organic gases and vapours filter Brown conforming to EN14387

When RPE is used a face piece Fit Test should be conducted

### Environmental exposure controls

Prevent product from entering drains.

### Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wash hands before breaks and at the end of workday.

## 9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	rotten-egg like
Odor Threshold	No information available
pH	6-8 @ 20°C 20% aq.sol
Melting Point/Range	-61 °C / -77.8 °F
Boiling Point/Range	153 °C / 307.4 °F
Flash Point	58 °C / 136.4 °F
Method -	Abel-Pensky (DIN 51755)
Evaporation Rate	0.17
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	15.2 vol %
Lower	2.2 vol %
Vapor Pressure	4.9 mbar @ 20 °C
Vapor Density	2.5
Specific Gravity	0.945
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	445 °C / 833 °F
Decomposition Temperature	> 350°C
Viscosity	0.8 mPa.s at 20 °C
Molecular Formula	C3 H7 N O
Molecular Weight	73.09
Surface tension	36.42 mN/m (25 °C)

## 10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions.
Conditions to Avoid	Incompatible products. Heat, flames and sparks. Keep away from open flames, hot surfaces and sources of ignition.
Incompatible Materials	Strong oxidizing agents, Halogens, Halogenated compounds, Reducing agents,
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), Nitrogen oxides (NO <sub>x</sub> )
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

## 11. Toxicological information

### Acute Toxicity

#### Product Information

LC50 Inhalation (DUST) VALUE 9400 mg/m<sup>3</sup>/24 (mouse)

LC50 Inhalation (VAPOR) VALUE 3421 ppm/h (rat)

#### Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Dimethylformamide	3040 mg/kg ( Rat )	1500 mg/kg (Rabbit) 3.2 g/kg ( Rat )	Not listed

Toxicologically Synergistic Products No information available

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes

**Sensitization** No information available

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Dimethylformamide	68-12-2	Group 2A	Not listed	A3	X	Not listed

**Mutagenic Effects** No information available

**Reproductive Effects** Experiments have shown reproductive toxicity effects on laboratory animals.

**Developmental Effects** May cause harm to the unborn child. Developmental effects have occurred in experimental animals.

**Teratogenicity** Teratogenic effects have occurred in experimental animals.

**STOT - single exposure** Respiratory system Central nervous system (CNS)

**STOT - repeated exposure** None known

**Aspiration hazard** No information available

**Symptoms / effects, both acute and delayed** May be harmful if absorbed through skin: Gastrointestinal discomfort: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

#### Endocrine Disruptor Information

Component	EU - Endocrine Disruptors Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Dimethylformamide	Group III Chemical	Not applicable	Not applicable

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

### Ecotoxicity

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Dimethylformamide	EC50 = 7500 mg/L/96h	Pimephales promelas: LC50 = 10.6 g/L/96h Onchorhynchus mykiss: LC50 = 9.8 g/L/96h Lepomis macrochirus: LC50 = 6.3 g/L/96h	EC50 = 2000 mg/L 5 min EC50 = 570 mg/L 240 h	EC50 = 7500 mg/L/48h

**Persistence and Degradability** Persistence is unlikely

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its water solubility but will likely degrade over time. Will likely be mobile in the environment due to its water solubility.

Component	log Pow
Dimethylformamide	-1.028

## 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

## 14. Transport information

### DOT

UN-No

UN2265

<b>Proper Shipping Name</b>	N,N-DIMETHYLFORMAMIDE
<b>Hazard Class</b>	3
<b>Packing Group</b>	III
<b>TDG</b>	
<b>UN-No</b>	UN2265
<b>Proper Shipping Name</b>	N,N-DIMETHYLFORMAMIDE
<b>Hazard Class</b>	3
<b>Packing Group</b>	III
<b>IATA</b>	
<b>UN-No</b>	UN2265
<b>Proper Shipping Name</b>	N,N-DIMETHYLFORMAMIDE
<b>Hazard Class</b>	3
<b>Packing Group</b>	III
<b>IMDG/IMO</b>	
<b>UN-No</b>	UN2265
<b>Proper Shipping Name</b>	N,N-DIMETHYLFORMAMIDE
<b>Hazard Class</b>	3
<b>Packing Group</b>	III

## 15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

### International Inventories

Component	DSL	NDSL	TSCA	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Dimethylformamide	X	-	X	200-679-5	-		X	X	X	X	X

### Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

Component	Canada - National Pollutant Release Inventory (NPRI)	Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances	Canada's Chemicals Management Plan (CEPA)
Dimethylformamide	Part 1, Group A Substance		

## 16. Other information

<b>Prepared By</b>	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com
<b>Creation Date</b>	03-September-2009
<b>Revision Date</b>	20-June-2018
<b>Print Date</b>	20-June-2018
<b>Revision Summary</b>	This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

### Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of SDS**